

**ISOLASI DAN KARAKTERISASI BAKTERI PENGHASIL ENZIM
KITINASE DARI LIMBAH UDANG SERTA POTENSINYA DALAM
MENGHAMBAT PERTUMBUHAN KAPANG *Fusarium* sp. PENYEBAB
PENYAKIT LAYU FUSARIUM PADA TANAMAN CABAI
SECARA *IN VITRO***

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ABSTRAK

Penelitian ini bertujuan untuk mengisolasi bakteri penghasil enzim kitinase dari limbah udang yang memiliki aktivitas enzim yang tinggi, genus bakteri, besar aktivitas enzim kitinase isolat terpilih dan pengaruh isolat terpilih dalam menghambat pertumbuhan kapang *Fusarium* sp.

Penelitian ini adalah penelitian eksplorasi dan eksperimen. Sampel limbah udang diperoleh dari tambak udang PT.Indokor Bangun Desa, Yogyakarta. Isolasi, pengukuran aktivitas enzim, karakterisasi dan uji antagonis dilakukan di Laboratorium Mikrobiologi FMIPA. Isolasi dengan metode *pour plate* pada media agar kitin diinkubasi suhu 37 °C; kemudian dilakukan pengukuran aktivitas enzim kitinase untuk menentukan dua isolat yang memiliki aktivitas tertinggi; kemudian dilakukan karakterisasi meliputi morfologi koloni, morfologi sel, uji fisiologi. Identifikasi dilakukan dengan metode *profile matching* yang ditelusuri melalui *Bergey's Manual of Determinative Bacteriology 9th edition*. Uji perlakuan antagonis dengan kapang *Fusarium* sp dilakukan dengan metode difusi kertas cakram *Kirby Bauer*. Data perlakuan dianalisis dengan *one way* ANOVA dengan program SPSS (*Statistical Product and Service Solution*). versi 16.0.

Hasil penelitian menunjukkan bakteri yang berhasil diisolasi berjumlah 35 isolat dengan 18 isolat positif penghasil kitinase. Terpilih dua isolat yaitu U.17 dengan aktivitas enzim 1,740 u/ml dan U.2 sebesar 1,700 u/ml. Hasil identifikasi isolat menunjukkan U.2 diduga genus *Streptomyces* dan U.17 diduga genus *Moraxella* dengan kemiripan karakter 75% dan 81,81%. Hasil uji antagonis dan analisis data dengan ANOVA menunjukkan bahwa kedua isolat dapat menghambat pertumbuhan kapang *Fusarium* sp dengan nilai signifikansi ($p \leq 0,05$).

Kata kunci: bakteri penghasil enzim kitinase, enzim kitinase, *Fusarium* sp.

**ISOLATION, CHARACTERIZATION, AND POTENCY OF CHITINASE-
PRODUCING BACTERIA FROM SHRIMP WASTE TO INHIBIT *Fusarium sp*
GROWTH THAT CAUSE OF FUSARIUM-WITHERED DISEASE
IN CHILI PLANT (*IN VITRO*)**

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ABSTRACT

This study aimed to isolate the chitinase-producing bacteria from shrimp waste which have the high enzyme activity, the genus of bacteria, chitinase enzyme activity of selected isolates and the chosen isolates's inhibition to the growth of fungi *Fusarium sp*.

This research is exploratory and experimental. Shrimp waste samples were obtained from shrimp farms PT. Indokor Bangun Desa, Yogyakarta. Isolation, enzyme activity measurement, characterization and antagonistic testing conducted at the Laboratory of Mikrobiologi FMIPA. Isolation with pour plate method on an chitin agar medium was incubated at 37 °C; then measuring the chitinase enzyme activity to determine the two isolates that have the high activity; then characterization including colony morphology, cell morphology, and physiology test. The identification is done with a profile matching method that was traced through the Bergey's Manual of Determinative Bacteriology 9th edition. Antagonist treatment test with the fungus *Fusarium sp* was conducted by Kirby Bauer diffusion paper disc. The data were analyzed with one way ANOVA using SPSS (Statistical Product and Service Solution). version 16.0.

The results showed the bacteria that isolated were 35 isolates with 18 positive chitinase-producing isolates. Two isolates were chosen ie U.17 with enzyme activity 1,740 U/ml and U.2 with 1,700 U/ml. Identification results of isolates showed U.2 allegedly genus *Streptomyces* and U.17 allegedly genus *Moraxella* with 75% of character similarity and 81.81%. Antagonist test results and data analysis with ANOVA showed that both isolates can inhibit the growth of *Fusarium sp* with a significance value ($p \leq 0.05$).

Keyword : chitinase-producing bacteria, chitinase enzyme, *Fusarium sp*.